

IR-DX8

8-Bit Infrared Remote Control Encoder / Decoder IC

The IR-DX8 is a custom infrared encoder/decoder IC designed by Reynolds Electronics for infrared remote control applications requiring flexibility & unique features not available with other remote control encoder or decoder ICs. The IR-DX8 is truly a single-chip remote control solution.

The IR-DX8 combines the functionality of both encoder and decoder in a single package with several unique features for enhanced operation and a reduced component count for infrared transmitter and receiver circuits.

The MODE pin configures the IR-DX8 IC for encode or decode operation. The L/M pin selects latching (L) or momentary (/M) outputs when the IR-DX8 is configured for decode mode.

Note: The MODE input must be wired directly to Vdd or circuit ground *before* power is applied. The IR-DX8 IC will configure itself automatically for encode or decode operation based on the logic state of the MODE input at power-up.

Latching or Momentary Outputs

The logic applied to the L/M pin selects latching or momentary output modes only when the IR-DX8 is configured for decode mode.

Decode Mode / Latching Outputs:

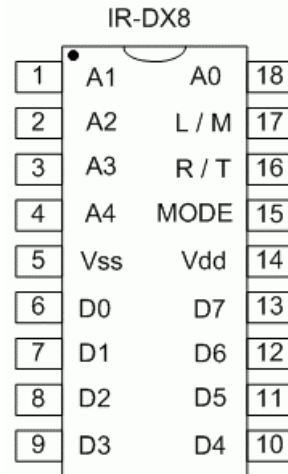
MODE = Vdd (Decode Function Selected)
L/M = Vdd (Latching Outputs Selected)
R/T = Receives IR Signal From Detector
A0-A4 = 5-Bit Address Inputs
D0-D7 = 8-Bit Latching Outputs

Decode Mode / Momentary Outputs:

MODE = Vdd (Decode Function Selected)
L/M = Ground (Momentary Outputs Selected)
R/T = Receives IR Signal From Detector
A0-A4 = 5-Bit Address Inputs
D0-D7 = 8-Bit Momentary Outputs

Decoder outputs can sink or source up to 25mA per pin with a total combined device package MAX of 200mA allowing direct remote control of LED's, solid-state relays, and other logic devices without the need for secondary driver circuits.

See the IR-DX8 example application schematics for encoder & decoder circuit configurations.



Encode Mode:

MODE = Ground (Encode Function Selected)
L/M = Ground or Vdd (Used Only by Decoder)
R/T = Transmit Output For IR LED
A0-A4 = 5-Bit Address Inputs
D0-D7 = 8-Bit Data Input (Button Inputs)

The L/M pin is sampled only when the IR-DX8 is in decode mode. In encode mode this pin must be connected to Vdd or ground, and should not be allowed to float.

When configured for encode mode, connecting any of the data inputs D0-D7 to ground will initiate a continuous infrared transmission at 40kHz. Removing ground from a data input will end the transmission.

Latching Key-Press

With the decoder in latch mode, data inputs D0-D7 of the encoder must be pressed & released one at a time to toggle decoder outputs on or off individually. Multiple key presses are not allowed on the encoder when the decoder is configured for latch mode.

Momentary Key-Press

In momentary mode, any combination of the encoder data inputs D0-D7 may be grounded simultaneously.

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Data & Address Validation

Encoder address pins A0-A4 must be set to the same logic levels as decoder address pins A0-A4. If these do not match, the decoder will ignore data sent from the encoder. The decoder must receive two consecutive & matching data/address packets before transferring data to the D0-D7 outputs. Each 13-bit packet transmit time requires approximately 48mS. Care should be taken not to violate these timing requirements when the IR-DX8 is controlled by high-speed logic circuits or embedded controllers such as the PIC, BASIC Stamp or 8051.

Important: Address input pins A0-A4, L/M, and the MODE input must **always** be connected to Vdd or circuit ground depending on the mode required. Allowing any of these input pins to "float" (leaving them un-connected) will cause erratic results.

Maximum Input/Output Sink/Source Current On Any Pin..... 25mA
Maximum Input/Output Sink/Source Current Total 200mA
Operating Voltage 3.0-5.0VDC well filtered
Avg. No Load Operating Current <2mA @5.0VDC
Carrier Frequency / Duty Cycle +/- 2%. 40kHz / 50%

DISCLAIMER

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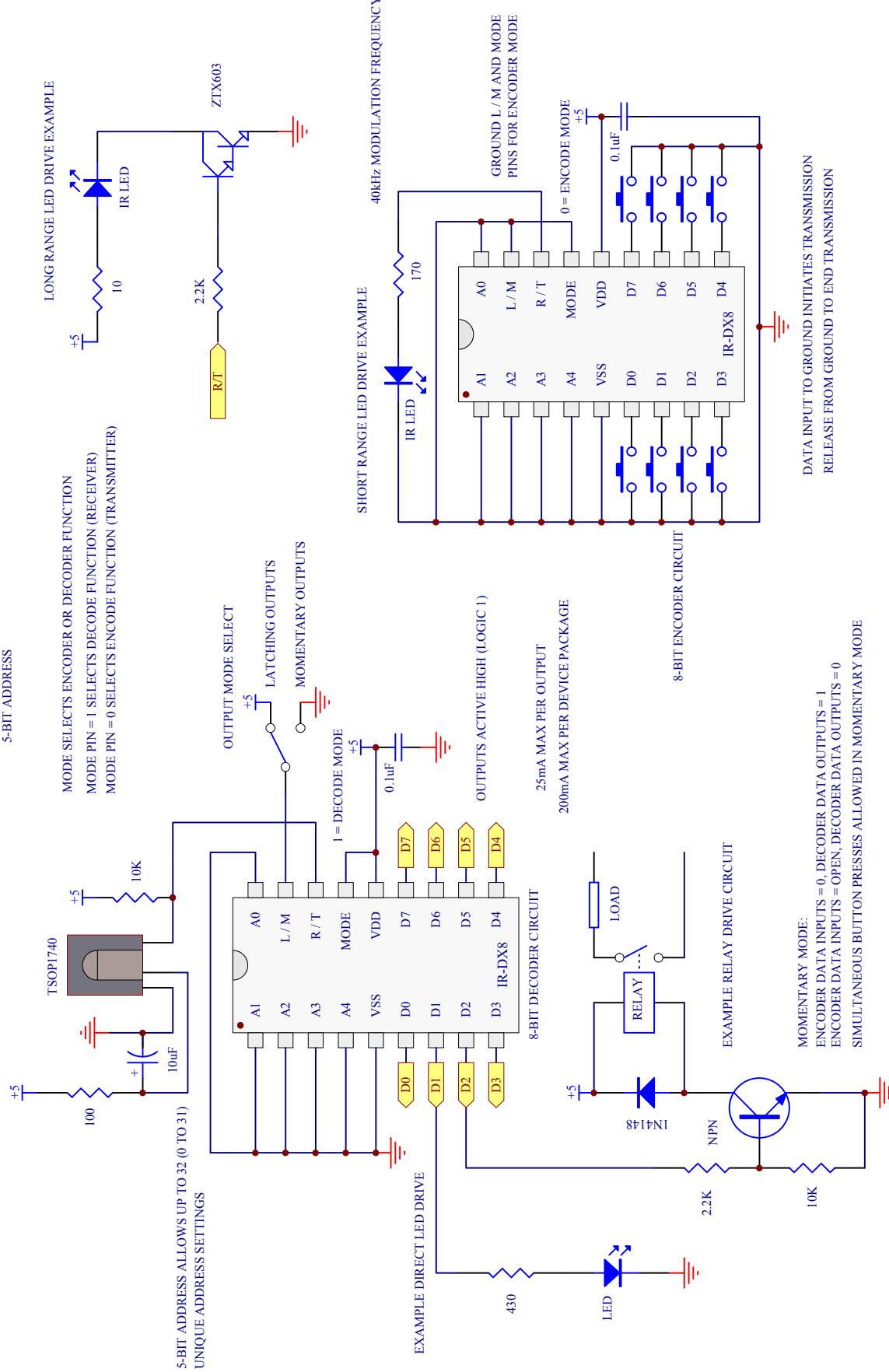
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The IR-DX8 are available for purchase online at: <http://www.rentron.com/IR-DX8.htm>

IR-DX8

THE SINGLE IC SOLUTION FOR BOTH REMOTE CONTROL, TRANSMITTER AND RECEIVER
 USER SELECTABLE MOMENTARY OR LATCHING OUTPUTS
 8-BITS DATA WITH UP TO 25mA PER OUTPUT
 5-BIT ADDRESS



5-BIT ADDRESS ALLOWS UP TO 32 (0 TO 31) UNIQUE ADDRESS SETTINGS

MODE SELECTS ENCODER OR DECODER FUNCTION
 MODE PIN = 1 SELECTS DECODE FUNCTION (RECEIVER)
 MODE PIN = 0 SELECTS ENCODE FUNCTION (TRANSMITTER)

OUTPUT MODE SELECT

LATCHING OUTPUTS

MOMENTARY OUTPUTS

1 = DECODE MODE

0.1uF

OUTPUTS ACTIVE HIGH (LOGIC 1)

25mA MAX PER OUTPUT

200mA MAX PER DEVICE PACKAGE

8-BIT DECODER CIRCUIT

EXAMPLE RELAY DRIVE CIRCUIT

8-BIT ENCODER CIRCUIT

430

LED

1N4148

NPN

2.2K

10K

SHORT RANGE LED DRIVE EXAMPLE

40kHz MODULATION FREQUENCY

170

IR LED

GROUND L / M AND MODE PINS FOR ENCODER MODE

VDD +5

0 = ENCODE MODE

0.1uF

D7

D6

D5

D4

D3

D2

D1

D0

A0

A1

A2

A3

A4

L / M

R / T

MODE

VSS

IR-DX8

LONG RANGE LED DRIVE EXAMPLE

10

IR LED

2.2K

ZTX603

DATA INPUT TO GROUND INITIATES TRANSMISSION

RELEASE FROM GROUND TO END TRANSMISSION

Title		IR-DX8 40kHz INFRARED ENCODER / DECODER IC	
Sample Encoder / Decoder Circuit Schematics		Revision A.1	
Size	Number	IR-DX8	
OrCAD A	Date:	14-Mar-2004	
File:	Sheet of	1 of 1	
C:\CAD\SCHEMATICS\Ddb	Drawn By:	B. REYNOLDS	

MOMENTARY MODE:
 ENCODER DATA INPUTS = 0, DECODER DATA OUTPUTS = 1
 ENCODER DATA INPUTS = OPEN, DECODER DATA OUTPUTS = 0
 SIMULTANEOUS BUTTON PRESSES ALLOWED IN MOMENTARY MODE

LATCHING MODE:
 PRESS & RELEASE "SINGLE" ENCODER INPUT BUTTON, DECODER OUTPUT = 1
 PRESS & RELEASE SAME "SINGLE" ENCODER INPUT BUTTON, DECODER OUTPUT = 0
 ONLY SINGLE BUTTON PRESSES ALLOWED IN LATCH MODE
 USER MUST PRESS & RELEASE BUTTONS INDIVIDUALLY
 TO TOGGLE THE LOGIC STATE OF DECODER OUTPUTS